

AMENDMENTS TO THE CLAIMS:

A listing of claims depicting present amendments and status (e.g., canceling claim 17 and amending claims 1 - 4, 8 and 14 - 16) is listed below.

1. (Currently Amended) A semiconductor device, comprising:
a one-conduction type semiconductor substrate;
a one-conduction type semiconductor layer formed on the substrate;
a plurality of first reverse-conduction type semiconductor regions, each designed to have an orthohexagonal shape formed to be spaced substantially equidistant from one another in the semiconductor layer;
a second reverse-conduction type semiconductor region ~~formed around~~ forming a boundary in the semiconductor layer so as to surround the plurality of first reverse-conduction type semiconductor regions; and
a metal layer forming Schottky junctions in cooperation with the semiconductor layer and surfaces of the first reverse-conduction type semiconductor regions.
2. (Currently Amended) The semiconductor device according to Claim 1, wherein the first reverse-conduction type semiconductor regions ~~comprise are formed by burying~~ buried reverse-conduction type semiconductor material ~~into~~ in trenches having an orthohexagonal shape formed in the semiconductor layer.
3. (Currently Amended) The semiconductor device according to Claim 1, wherein the first reverse-conduction type semiconductor regions are diffused regions of ~~formed by diffusing~~ reverse-conduction type impurities ~~in~~ into the semiconductor layer.
4. (Currently Amended) The semiconductor device according to Claim 1, wherein the ~~respective neighboring~~ plurality of first reverse-conduction type semiconductor regions are disposed so as to be spaced from one another at such intervals that the semiconductor layer between neighboring first reverse-conduction type semiconductor regions is fully depleted ~~filled in a depletion layer~~ when reverse voltages are applied.

5. (Original) The semiconductor device according to Claim 1, wherein respective neighboring first reverse-conduction type semiconductor regions are disposed so as to be spaced from one another at substantially equal intervals.
6. (Original) The semiconductor device according to Claim 1, wherein the first reverse-conduction type semiconductor regions are formed with a thickness smaller than the thickness of the semiconductor layer.
7. (Original) The semiconductor device according to Claim 1, wherein the second reverse-conduction type semiconductor region is a diffusion region.
8. (Currently Amended) The semiconductor device according to Claim 1, wherein the second reverse-conduction type semiconductor region comprises ~~is formed by burying~~ buried semiconductor material in ~~into~~ a plurality of trenches formed in the semiconductor layer.
9. (Withdrawn) A method for manufacturing a semiconductor device, comprising:
 - laminating a one-conduction type semiconductor layer on a one-conduction type semiconductor substrate;
 - forming, in the semiconductor layer, a plurality of first reverse-conduction type semiconductor regions and a second reverse-conduction type semiconductor region surrounding the plurality of first reverse-conduction type semiconductor regions; and
 - forming a metal layer that forms Schottky junctions in cooperation with the semiconductor layer and surfaces of the first reverse-conduction type semiconductor regions.
10. (Withdrawn) A method for manufacturing a semiconductor device according to Claim 9, wherein the first reverse-conduction type semiconductor regions are formed by ion-implanting and diffusing impurities.
11. (Withdrawn) A method for manufacturing a semiconductor device according to Claim 9, wherein the first reverse-conduction type semiconductor regions are formed by forming trenches in the semiconductor layer and burying reverse-conduction type semiconductor material in the trenches.

12. (Withdrawn) A method for manufacturing a semiconductor device according to Claim 9, wherein the second reverse-conduction type semiconductor region is formed by forming a plurality of trenches in the semiconductor layer and burying reverse-conduction type semiconductor material in the trenches.
13. (Withdrawn) A method for manufacturing a semiconductor device according to Claim 9, wherein the first reverse-conduction type semiconductor regions and the second reverse-conduction type semiconductor region are simultaneously formed.
14. (Currently Amended) A semiconductor device, comprising:
a one-conduction type semiconductor substrate;
a one-conduction type semiconductor layer formed on the substrate;
at least one reverse-conduction type semiconductor region, each designed to have an orthohexagonal shape formed in the semiconductor layer;
a metal layer forming a Schottky junction area in cooperation with the semiconductor layer and surfaces of the at least one reverse-conduction type semiconductor region; and
said at least one reverse-conduction type semiconductor region being configured such that the semiconductor layer in a Schottky junction area is fully depleted ~~filled in a depletion layer~~ when a reverse voltage is applied.
15. (Currently Amended) The semiconductor device of claim 14, wherein said at least one reverse-conduction type semiconductor region includes: a plurality of first reverse-conduction type semiconductor regions formed in the semiconductor layer; and a second reverse-conduction type semiconductor region ~~formed around~~ forming a boundary in the semiconductor layer so as to surround the plurality of first reverse-conduction type semiconductor regions.
16. (Currently Amended) A semiconductor device, comprising:
a substrate;
a semiconductor layer on the substrate;
a metal layer forming a Schottky junction area in cooperation with the semiconductor layer;

means for fully depleting ~~filling~~ the semiconductor layer of carriers in the Schottky junction area ~~in a depletion layer~~ when a reverse voltage is applied such as to pinch off the semiconductor layer so as to suppress an IR leak current, wherein the means for fully depleting includes: a plurality of first reverse-conduction type semiconductor regions, each designed to have an orthohexagonal shape formed in the semiconductor layer; and a second reverse-conduction type semiconductor region forming a boundary in the semiconductor layer so as to surround the plurality of first reverse-conduction type semiconductor regions.

17. (Cancelled) The semiconductor device of claim 16, wherein the means for fully filling includes: a plurality of first reverse-conduction type semiconductor regions formed in the semiconductor layer; and a second reverse-conduction type semiconductor region formed around the semiconductor layer so as to surround the plurality of first reverse-conduction type semiconductor regions.